

Remarks

Entry of the foregoing and reconsideration of the application identified in caption as amended, pursuant to and consistent with the Rules of Practice in Patent Cases, and in light of the remarks which follow, is respectfully requested.

By the present amendment, Claim 13 has been amended and new claim 25 has been proposed, so that claims 1-19, 24 and 25 will be pending upon entry of the present amendment.

Claim 13 has been amended so as to obviate the rejection under 35 U.S.C. § 112, second paragraph, for indefiniteness. As amended, claim 13 provides clear antecedent basis for the term "tooth surface." Accordingly, withdrawal of the record rejection of claim 13 under 35 U.S.C. § 112, second paragraph, is respectfully requested.

New claim 25 finds support in the specification at least at pages 4-15 and in the Examples. Particularly of note for comparison is the text at page 10, lines 6-22, which discloses incorporation of fiber-shaped fillers according to a further embodiment of the polymer film of the present invention. Accordingly, no new matter has been presented by proposed claim 25.

Applicants submit that the present invention is novel and unobvious over the prior art. As set forth on page 4, starting at line 12 of the specification, the present invention is directed to a polymer film which has been polymerized containing monomers in the film still capable of further polymerization. Pages 4 and 5 set forth several methods to fabricate the film from starting materials to an incomplete polymerization with monomers remaining or to a complete polymerization with the later introduction of monomers. Either way, the polymer film is in an intermediate state and due to its flexibility the material can be easily formed around the tooth surfaces. Once set in place, the film is cured by further polymerization of the monomers to its final hardened state. As set forth on page 10, starting at line 23, suitable polymerization inhibitors are contained in the polymer film to prevent premature polymerization of the polymerizable groups present prior to the final polymerisation. This ensures that the film is sufficiently pliable during storage and in use during fitting. The invention is practiced, for example, in accordance with the methods set forth on page 15, starting at line 8, in which the polymer film is applied to the tooth surface, fitted by shaping

and then the polymerizable groups of the thus applied and fitted polymer film are further polymerized to completion.

The dental polymer film is a polymerized film sufficiently flexible to allow shaping around a tooth, which contains groups within the film capable of further polymerization with the film, and when further polymerized these groups are contained to a sufficient extent to cause the film to harden to a covering which is adhered to the tooth .

Claims 1, 2, 4-6, 8, 9, 11, 16, 17, 19, and 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,197,410 to Vallittu et al. ("Vallittu"). This rejection is respectfully traversed.

Contrary to the examiner's position, Vallittu fails to disclose or suggest a dental polymer film. Rather, this document clearly relates to what is commonly referred to as a "prepreg." A prepreg is typically composed of fibers impregnated with a resinous material including polymeric and monomeric substances. The skilled person confronted with the disclosure of this document would clearly not regard the described prepgs to be dental polymer films according to the present invention. Prepgs are manufactured from in particular unidirectional fibers, i.e., fiber strands, fiber weaves or fiber mats (see column 5, lines 58-59). Even after these starting materials have been impregnated with polymeric and monomeric substances, a final product is obtained which does not take the form of a polymer film in accordance with the present invention. The product does not have the surface of a polymer film and moreover does not have the three-dimensional form of a film, in particular the small thickness of a film. In contrast to a film, the prepreg disclosed in Vallittu will also have fibers protruding from the surface of the impregnated product. These exposed fibers would tend to mechanically irritate oral soft tissues, which is highly undesirable. Such tissue irritation does not occur with the dental polymer film according to the present invention.

Thus, the Vallittu document does not disclose or suggest a dental polymer film according to the present invention. This is further apparent when looking at the specific passages referred to by the examiner.

Figures 1A and 1B clearly show cross-sectional views of impregnated fiber strands. These impregnated fiber strands do not take the form of a film which is a thin plane product in which the thickness is very small relative to the length and width.

Figure 2 shows a packaging of the prepreg. In a rather simplifying manner it is just showing a prepreg in the form of a web-like material. It is, however, not showing a material which takes the form of a film of the present invention.

Also, in columns 3 through 6 and 8 through 10 of the document, only impregnated fibers are disclosed and these are clearly not dental polymer films in view of the different structure and form shown therein as compared to the polymer film of the present invention.

Thus, the rejection based on this document is unfounded as apparently being based on an interpretation of the terms "prepreg" and "polymer film" contrary to that applied by a person of ordinary skill in the art. The skilled person would clearly distinguish between a polymer film and fiber materials which have been impregnated, i.e. wherein the voids between the single fibers have been filled with polymeric material.

Withdrawal of the record rejection of claims 1, 2, 4-6, 8, 9, 11, 16, 17, 19, and 24 under 35 U.S.C. § 102(b) as being anticipated by Villittu and allowance of said claims is respectfully requested.

Claims 1-6, 8, 10, 12, 13, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,039,569 to Prasad et al. ("Prasad"). This rejection is respectfully traversed.

Prasad discloses dental structures such as bridges and crowns which include a structural component, namely a fiber reinforced polymeric matrix bar. It is disclosed that the reinforcing bar may be provided to the dentist or technician as a prefabricated composite (see column 5, lines 8-10). It is moreover disclosed in the following passage relied upon by the examiner that in a preferred embodiment this composite material is provided in the form of a ribbon with the fibers being impregnated with uncured polymer matrix (column 5, lines 12-15).

Such a "ribbon" is apparently a precursor for the bar and thus would not be considered a "polymer film" within the context of the present invention. Several cuttings of the ribbon are pressed together to form the desired bar (see column 5, lines 18-14). This suggests that the ribbon does not have the small thickness of a film as the final bar has a substantial thickness to be able to act as a structural component bearing mechanical loads.

Withdrawal of the record rejection of claims 1-6, 8, 10, 12, 13, and 16 under 35 U.S.C. § 102(e) as being anticipated by Prasad and allowance of said claims is respectfully requested.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being obvious over Vallittu or Prasad in view of U.S. Patent No. 5,154,762 to Mitra et al. ("Mitra"). This rejection is respectfully traversed.

Mitra is relied upon for the disclosure of an initiator in microencapsulated form. However, as set forth in detail below, Mitra fails to make up for the deficiencies noted above with respect to Vallittu and Prasad with regard to the lack of a teaching of the dental polymer film of the present invention. Thus, claim 7 is patentable for at least the reasons that claim 1 from which it depends is patentable.

Mitra discloses a dental cement containing polymerizable components which have three curing modes (column 2, lines 6 to 7) which are formulated in two parts, e.g. in the form of a powder portion and a liquid portion (column 2, lines 38 to 46). The cement contains water, acid-reactive filler, water-miscible acidic polymer, an ethylenically-unsaturated moiety, photoinitiator, water-soluble reducing agent, and water-soluble oxidizing agent. The cement composition can be applied to the teeth and cured in a variety of ways. Again, it does not appear that the composition when applied to a tooth prior to polymerization can be characterized as a solid flexible film. Accordingly, these formulations do not have the form of solid flexible polymeric films and when hardened the materials do not contain any polymerizable groups capable of further polymerization. Thus, after hardening these formulations can not be considered flexible polymer films either. Claim 7 is not rendered obvious by the proposed combination for at least the reasons noted above.

Withdrawal of the record rejection of claim 7 under 35 U.S.C. § 103(a) as being obvious over Vallittu or Prasad in view of Mitra and allowance of claim 7 is respectfully requested.

Claims 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being obvious over Vallittu. This rejection is respectfully traversed.

The examiner contends that it would have been obvious to coat one side of the material of Vallittu with an anti-adhesive. However, claims 14 and 15 depend from claim 1 and are not obvious in view of the teachings of Vallittu for at least the reasons noted above.

Withdrawal of the record rejection of claims 14 and 15 under 35 U.S.C. § 103(a) as being obvious over Vallittu and allowance of said claims is respectfully requested.

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being obvious over Vallittu in view of WO 01/93774 to Karazivan ("Karazivan"). This rejection is respectfully traversed.

Karazivan is relied upon for the disclosure of a carrier film in the form of an inflatable film bag. However, as set forth in detail below, Karazivan fails to make up for the deficiencies noted above with respect to Vallittu with regard to the lack of a teaching of the dental polymer film of the present invention. Thus, claim 18 is patentable for at least the reasons that claim 1 from which it depends is patentable.

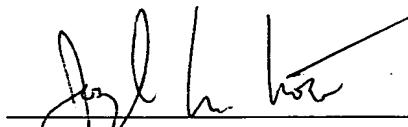
Karazivan corresponds to U.S. Published Patent Application No. 2004/0063075. This document discloses an applicator for the application of a sealant to dental surfaces (page 1, paragraph [0007]). The sealing agent can be cured and adhered to the surface of tooth. This device includes a closed surface which may be made of a plastic material capable of plastic or elastic deformation (claim 28). Preferably, the closed surface is made of Mylar® (claim 54), a polymeric film produced by DuPont [0062]. It follows that this document discloses the use of typical polymer films which do not include polymerizable groups. The sealing agent which is applied to the tooth is a polymerizable material such as a dental adhesive, dental cement etc. (page 2, paragraph [0050], which does not have the form of a solid flexible polymer film. According to our understanding of this procedure, a mold is formed by the dental surface to be treated and the closed surface of the device. The mold is then be filled with the sealing agent (see page 3, paragraph [0059]).

In contrast, the present invention is a flexible polymer film which material can be used directly for coating a tooth surface without requiring a device, as disclosed by Karazivan. Consequently, the present invention is not rendered obvious by the proposed combination for at least the reasons noted above.

Withdrawal of the record rejection of claim 18 under 35 U.S.C. § 103(a) as being obvious over Vallittu in view of Karazivan and allowance of said claim is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is hereby earnestly solicited.

Respectfully submitted,



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Date: January 10, 2007

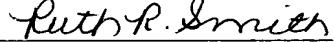
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Ruth R. Smith